Kula Bio®

Nitrogen Production. Reimagined.

Kula Bio harnesses and amplifies the natural capabilities of *Xanthobacter autotrophicus*, a nitrogen-fixing microbe. They live in the root zone, converting nitrogen from the air into a plant-available form.

Precision Nitrogen, Peak Performance

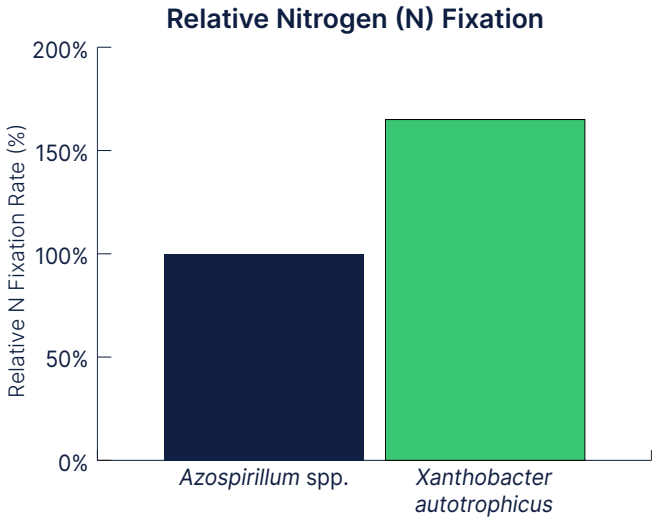
Our Products:

- Provide an immediate and longer lasting source of nitrogen for plants
- Contain a live, single strain of *Xanthobacter*
- Are naturally derived with formulations suitable for use in both traditional and organic production
- Increase efficiency of nitrogen delivery by providing nitrogen delivery at the root zone to maximize usage
- Are robust and tolerant of various soil and environmental conditions
- Deliver consistent field performance across various crops
- Can replace or supplement traditional nitrogen fertilizer in your standard fertility program

Supercharged Performance

Biological nitrogen fixation requires substantial energy. Our patented technology fully equips microbes with a unique energy source, allowing them to start working immediately upon soil application. Supercharging our microbes enhances their natural nitrogen-fixing capabilities without any genetic modification.

When compared to other common nitrogen-fixing bacteria, like *Azospirillum* spp., *Xanthobacter autotrophicus* is able to fix ~65% more N per cell.

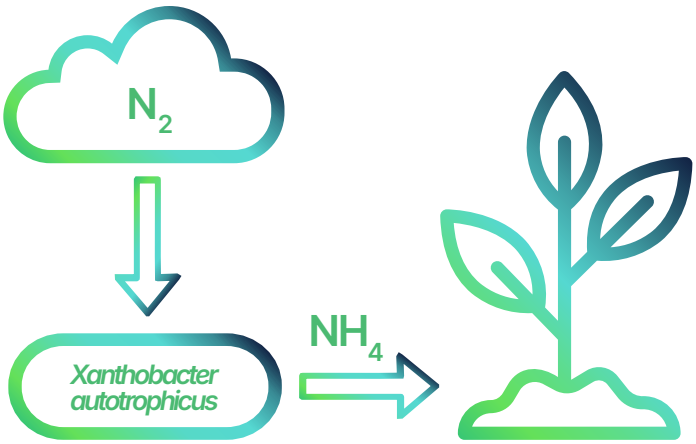


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Moving the Factory to the Field

Our technologies leverage the power of earth's microbes to enhance crop nutrition with greater effectiveness and efficiency. At Kula Bio, we're bringing the factory to the field — utilizing natural microbes to produce nitrogen directly at the root zone of plants, when and where plants need it most.

Basics of Nitrogen Fixation



Nitrogen-fixing *Xanthobacter*:

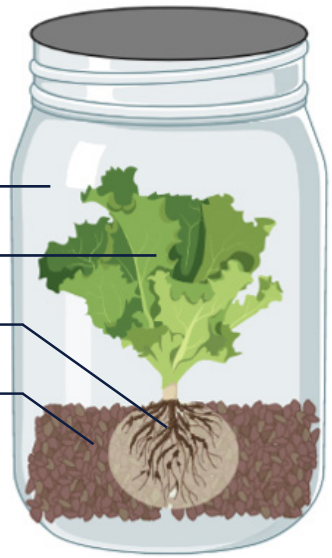
- Outperforms the competition
- Enhances nitrogen fixation, leading to improved plant growth
- Reduces the need for chemical fertilizers
- Improves soil health for more sustainable farming
- Is a cost-effective solution

Nitrogen is abundant in the atmosphere, where it exists as a gas called N_2. While nitrogen is all around us, plants cannot use it in this form. They need nitrogen in a different, more accessible form to grow.

Xanthobacter autotrophicus is a unique species of bacteria that can help with this. It uses an enzyme called nitrogenase, along with a unique energy source, to "fix" the nitrogen in the air, changing it from N_2 into a plant-available form of nitrogen that can be easily utilized by plants.

Delta ^{15}N Signal Experiment

^{15}N Enriched Control	^{15}N Enriched + Kula Product
~45,000	
40.6	214.8
12.5	33.6
5.8	33.5



Lettuce was harvested 7 days after ^{15}N infusion. The application of *Xanthobacter autotrophicus* significantly increased the ^{15}N signal, demonstrating that there is active transfer of fixed nitrogen to plants.

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